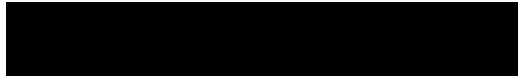


EXHIBIT 14



Trials@uspto.gov
571-272-7822

Paper 9
Entered: November 28, 2022

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

COMMSCOPE, INC.,
Petitioner,

v.

TQ DELTA, LLC,
Patent Owner.

IPR2022-01012
Patent 10,833,809 B2

Before LYNNE E. PETTIGREW, ROBERT J. WEINSCHENK, and
KARA L. SZPONDOWSKI, *Administrative Patent Judges*.

PETTIGREW, *Administrative Patent Judge*.

DECISION
Granting Institution of *Inter Partes* Review
35 U.S.C. § 314

IPR2022-01012

Patent 10,833,809 B2

I. INTRODUCTION

Petitioner, CommScope, Inc., filed a Petition for *inter partes* review of claims 1–28 of U.S. Patent No. 10,833,809 B2 (Ex. 1001, “the ’809 patent”). Paper 2 (“Pet.”). Patent Owner, TQ Delta, LLC, filed a Preliminary Response. Paper 8 (“Prelim. Resp.”).

Under 35 U.S.C. § 314 and 37 C.F.R. § 42.4(a), we have authority to institute an *inter partes* review if “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a). After considering the parties’ briefing and the evidence of record, we conclude the information presented shows there is a reasonable likelihood that Petitioner would prevail in establishing the unpatentability of at least one of the challenged claims of the ’809 patent. Accordingly, we institute an *inter partes* review of the challenged claims on the grounds of unpatentability asserted in the Petition.

II. BACKGROUND

A. Related Matters

The parties indicate that the ’809 patent is involved in the following proceedings: *TQ Delta, LLC v. CommScope Holding Co.*, Case No. 2:21-cv-00310 (E.D. Tex.), and *TQ Delta, LLC v. Nokia Corp.*, Case No. 2:21-cv-00309 (E.D. Tex.) (collectively, “the Texas litigation”). Pet. 78–79; Paper 5, 1 (Patent Owner’s Mandatory Notices).

B. Overview of the ’809 Patent

The ’809 patent is titled “Techniques for Packet and Message Communication in a Multicarrier Transceiver Environment” and is generally directed to “retransmission of packets in a communication environment.”

IPR2022-01012

Patent 10,833,809 B2

Ex. 1001, code (54), 1:36–38. The '809 patent generally describes that “packets can be handled based on an assigned packet handling identifier . . . [and] optionally in conjunction with retransmission protocols including a packet handling identifier, a memory used for retransmission of packets can be shared with other transceiver functionality such as, coding, decoding, interleaving, deinterleaving, error connection, and the like.” *Id.* at code (57).

Figure 1 of the '809 patent, reproduced below, shows transceivers 200 and 300 that communicate over communications channel 10.

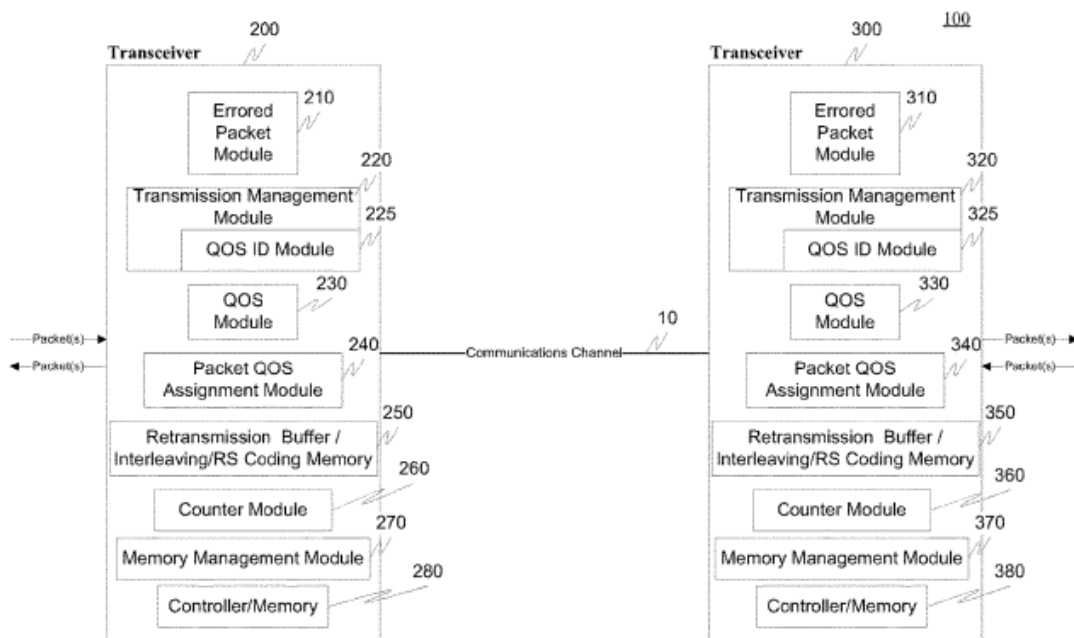


Fig. 1

Figure 1, above, depicts transceiver 200 and transceiver 300 connected via communications channel 10. *Id.* at 10:18–19. Both transceivers contain certain componentry, such as Errored Packet Module 210 and 310, Transmission Management Module 220 and 320, QOS Module 230 and 330, Packet QOS Assignment Module 240 and 340, Retransmission Buffer/Interleaving/RS Coding Memory 250 and 350, Counter Module 260

IPR2022-01012

Patent 10,833,809 B2

and 360, Memory Management Module 270 and 370, and Controller/Memory 280 and 380. *Id.* at 10:8–26.

As described in the '809 patent, “transceiver 200, in cooperation with the QOS module 230, receives packets from a higher-layer. In cooperation with the packet QOS assignment module 240, a packet Sequence ID (SID) is appended to the received packets.” *Id.* at 12:19–22. The SID is a counter value indicating the place of each packet in a stream of packets and may be appended in a number of places, including at the beginning or end of the packet header. *Id.* at 12:52–63. The packets received may also already have information in a header or data field. *Id.* at 12:64–66. “The packets, in cooperation with the transmission management module 220, can then be transmitted in the order in which they were received.” *Id.* at 12:22–25.

Transceiver 300 receives packets from the transmitting modem, e.g., transceiver 200. *Id.* at 13:40–44. The received packet may be passed to a higher-layer if it is identified as low-latency by QOS ID module 325, or may be forwarded to retransmission buffer 350 for a minimum amount of time before passing to a higher-layer if it is identified as a low-PER packet by QOS ID module 325. *Id.* at 13:44–51. In addition, in cooperation with retransmission buffer 350 and errored packet module 310, missing or errored packets can be detected in a number of ways. *Id.* at 14:35–38. If a packet is found to be in error, there are different ways in which transceiver 300 can communicate information to transceiver 200 indicating that retransmission of one or more packets is required. *Id.* at 14:60–15:37. For example, transceiver 300, in cooperation with errored packet module 310, can send an acknowledgment (ACK) message to transceiver 200 for every correctly received message, or can send a negative acknowledgment (NAK) message

IPR2022-01012

Patent 10,833,809 B2

to transceiver 200 when a packet is detected as errored or missing. *Id.* at 14:63–15:1, 15:30–38.

The ACK and NAK messages can be transmitted over the same physical channel as the received packets. *Id.* at 15:55–58. However, the ’809 patent states that it is important to minimize latency requirements for the message channel. *Id.* at 15:61–64. One way to do this is to send messages over a separate “low-latency” or “fast” path between transceivers that “could include little or even no delay due to interleaving and can be specified to have a latency that is less than 2 ms.” *Id.* at 15:66–16:2. Alternatively, or in addition, the messages can be sent “such that each message is repeated a number of times and each repeated message is sent in a different DMT symbol. For example, the message can be repeated x times and each message sent in one of x DMT symbols. This way, even if $x - 1$ DMT symbols were corrupted by the channel, at least one message could be received correctly.” *Id.* at 16:9–16.

C. Illustrative Claim

Among the challenged claims, claims 1, 8, 15, and 22 are independent. Claims 2–7 depend from claim 1, claims 9–14 depend from claim 8, claims 16–21 depend from claim 15, and claims 23–28 depend from claim 22. Claim 1 is illustrative of the claimed subject matter:

1. [1.pre] An apparatus comprising:
 - [1.a] a multicarrier transceiver including a processor and memory capable of:
 - [1.b] transmitting a packet using forward error correction encoding and interleaving, [1.b.1] wherein the packet comprises a header field and a plurality of Reed-Solomon codewords, and [1.b.2] wherein the header field comprises a sequence identifier (SID); and

IPR2022-01012

Patent 10,833,809 B2

[1.c] receiving a message using forward error correction decoding and without using deinterleaving,
 [1.c.1] wherein the message is received in a single DMT symbol, and [1.c.2] wherein the message includes an acknowledgement (ACK) or negative acknowledgement (NACK) of the received packet.

Ex. 1001, 24:11–24 (modified to include Petitioner’s identification of claim limitations).

D. Asserted Grounds of Unpatentability

Petitioner asserts that the challenged claims are unpatentable based on the following grounds (Pet. 2):

Claim(s) Challenged	35 U.S.C. §	Reference(s)/Basis
1–28	103(a) ¹	G.993.2, ² Mitlin, ³ Fukushima ⁴
1–28	103(a)	G.993.2, Mitlin, Reynders ⁵

Petitioner submits the declaration of Bruce McNair in support of the Petition. Ex. 1003.

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 285–88 (2011), amended 35 U.S.C. § 103 effective March 16, 2013. Because the ’809 patent has an effective filing date earlier than March 16, 2013, we refer to the pre-AIA version of § 103. *See* Ex. 1001, codes (22), (60).

² ITU-T Recommendation G.993.2, *Series G: Transmission Systems and Media, Digital Systems and Networks, Digital sections and digital line system – Access networks, Very high speed digital subscriber line transceivers 2 (VDSL2)* (Feb. 2006) (Ex. 1004, “G.993.2” or “VDSL2”).

³ U.S. Patent Application Publication No. US 2002/0108081 A1, pub. Aug. 8, 2002 (Ex. 1005, “Mitlin”).

⁴ U.S. Patent Application Publication No. US 2005/0053093 A1, pub. Mar. 10, 2005 (Ex. 1006, “Fukushima”).

⁵ Deon Reynders & Edwin Wright, *Practical TCP/IP and Ethernet Networking* (Newnes 2003) (Ex. 1007, “Reynders”).

IPR2022-01012

Patent 10,833,809 B2

III. DISCUSSION

A. Real Parties in Interest

Petitioner identifies CommScope Holding Company, Inc., CommScope, Inc, ARRIS US Holdings, Inc., ARRIS Solutions, Inc., ARRIS Technology, Inc., and ARRIS Enterprises, Inc. as real parties in interest. Pet. 78; Paper 6, 2 (Petitioner’s Updated Mandatory Notices). Patent Owner identifies itself as the only real party in interest. Paper 5, 1.

Patent Owner contends that Petitioner fails to disclose Nokia Corp. (“Nokia”) as a real party in interest. Prelim. Resp. 15–19. Patent Owner asserts that “Nokia and CommScope are co-defendants in the Texas Lawsuit, and they have acted in a clearly cooperative form in filing [13] actions before the Board” in that none of their “combined 13 IPR petitions overlap and cover the same patents, confirming a contract on joint strategy.” *Id.* at 17.

Patent Owner does not assert that inclusion of Nokia as a real party interest would have barred the Petition under 35 U.S.C. § 315(b). *See id.* at 15–19. Therefore, it is unnecessary for us to determine whether Nokia is a real party in interest for purposes of deciding whether to institute an *inter partes* review. *See SharkNinja Operating LLC v. iRobot Corp.*, IPR2020-00734, Paper 11 at 18–20 (PTAB Oct. 6, 2020) (precedential) (no real party in interest analysis is necessary at institution absent allegation of time bar or estoppel based on unnamed RPI). Accordingly, at this stage of the proceeding, we do not consider whether Nokia should have been named as a real party in interest.

B. Discretion Under 35 U.S.C. § 314(a)

Patent Owner contends that we should exercise our discretion to deny institution under 35 U.S.C. § 314(a) in light of the Texas litigation. Prelim.

IPR2022-01012
Patent 10,833,809 B2

Resp. 19–29. Patent Owner contends that the factors identified in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential) (“*Fintiv*”), weigh in favor of denying institution. *Id.*

On June 21, 2022, the Director of the U.S. Patent and Trademark Office (“USPTO”) issued a Memorandum titled “Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings With Parallel District Court Litigation” (“Memorandum”),⁶ which states, among other things, that “the PTAB will not discretionarily deny institution in view of parallel district court litigation where a petitioner presents a stipulation not to pursue in a parallel proceeding the same grounds or any grounds that could have reasonably been raised before the PTAB.” Memorandum 3.

On July 7, 2022, Petitioner submitted in the Texas litigation “Defendants’ Stipulation Regarding Invalidity Contentions,” which states that “Defendants hereby stipulate that if the Board institutes IPR in . . . IPR2022-01012, they will not pursue in this case the specific grounds identified . . . in connection with the referenced patent(s) [including the ’809 patent] and claim(s) as originally issued on the instituted IPR petition(s), or any other ground for a given patent for which the Board institutes that was raised or reasonably could have been raised in an IPR.” Ex. 1035, 3.

Therefore, we decline to exercise our discretion to deny institution in this proceeding under *Fintiv* in accordance with the Memorandum.

⁶ The Memorandum is available at https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621.pdf.

IPR2022-01012
Patent 10,833,809 B2

C. Discretion Under 35 U.S.C. § 325(d)

Patent Owner asserts that we should exercise our discretion under 35 U.S.C. § 325(d) to deny institution because both G.993.2 and Fukushima “are not new art and were before the Examiner.” Prelim. Resp. 33–37. We decline to exercise discretion to deny institution under § 325(d) for the reasons discussed below.

1. Legal Standards

In evaluating the exercise of discretion to deny institution under Section 325(d), the Board uses a two-part framework: (1) determining whether the same or substantially the same art previously was presented to the Office or whether the same or substantially the same arguments previously were presented to the Office; and (2) if either condition of the first part of the framework is satisfied, determining whether the petitioner has demonstrated that the Office erred in a manner material to the patentability of challenged claims. *Advanced Bionics, LLC v. Med-El Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential).

In applying the two-part framework, we consider several non-exclusive factors, including:

- (a) the similarities and material differences between the asserted art and the prior art involved during examination;
- (b) the cumulative nature of the asserted art and the prior art evaluated during examination;
- (c) the extent to which the asserted art was evaluated during examination, including whether the prior art was the basis for rejection;
- (d) the extent of the overlap between the arguments made during examination and the manner in which petitioner relies on the prior art or patent owner distinguishes the prior art;

IPR2022-01012

Patent 10,833,809 B2

(e) whether petitioner has pointed out sufficiently how the examiner erred in its evaluation of the asserted prior art; and

(f) the extent to which additional evidence and facts presented in the petition warrant reconsideration of the prior art or arguments.

Becton, Dickinson & Co. v. B. Braun Melsungen AG, IPR2017-01586, Paper 8 at 17–18 (PTAB Dec. 15, 2017) (precedential as to Section III.C.5, first paragraph) (“*Becton, Dickinson*”). *Becton, Dickinson* factors (a), (b), and (d) relate to whether the art or arguments presented in the Petition are the same or substantially the same as those previously presented to the Office. *Advanced Bionics*, Paper 6 at 10. Factors (c), (e), and (f) “relate to whether the petitioner has demonstrated a material error by the Office” in its prior consideration of that art or arguments. *Id.* Only if the same or substantially the same art or arguments were previously presented to the Office do we consider whether the petitioner has demonstrated a material error by the Office. *Id.* “At bottom, this framework reflects a commitment to defer to previous Office evaluations of the evidence of record unless material error is shown.” *Id.* at 9.

2. Whether the Same or Substantially the Same Art or Arguments Were Previously Presented to the Office

It is undisputed that G.993.2 and Fukushima were before the Examiner during prosecution of the ’809 patent. Pet. 13, 72; Prelim. Resp. 9, 11–12, 33–34, 36. However, Petitioner asserts that the Examiner made no prior art rejections during prosecution of the application that led to the ’809 patent and that there is no evidence to suggest that G.993.2 or Fukushima was specifically considered by the Examiner during prosecution. Pet. 72.

IPR2022-01012

Patent 10,833,809 B2

Patent Owner does not contend that Mitlin or Reynders was before the Examiner or is cumulative of prior art evaluated during examination, or that either the combination of G.993.2, Mitlin, and Fukushima or the combination of G.993.2, Mitlin, and Reynders was before the Examiner. *See generally* Prelim. Resp. In other words, each of Petitioner's grounds relies on one or more additional references that were not before the Examiner, i.e., Mitlin and Reynders. *See, e.g.*, Pet. 2.

Under these circumstances, we find the first part of the *Advanced Bionics* framework is not satisfied because the Petition sets forth only combinations of prior art and arguments that are not the same or substantially the same as those previously presented to the Office. Accordingly, we decline to exercise our discretion to deny institution pursuant to 35 U.S.C. § 325(d).

D. Legal Standard for Obviousness

A claim is unpatentable under § 103(a) if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective indicia of non-obviousness.⁷ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

⁷ With respect to the fourth *Graham* factor, the parties do not present arguments or evidence regarding objective indicia of non-obviousness. *See* Pet. 72; Prelim. Resp.

IPR2022-01012

Patent 10,833,809 B2

E. Level of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art at the time of the alleged invention of the '809 patent

would have possessed a bachelor's degree in electrical or computer engineering, or the equivalent, and at least 5–6 years of experience; a master's degree in electrical or computer engineering, or the equivalent, and at least 2–3 years of experience; or Ph.D. in electrical or computer engineering, or the equivalent, with at least 1–2 years of experience.

Pet. 11–12 (citing Ex. 1003 ¶ 33). Patent Owner does not dispute

Petitioner's proposed level of skill in the art. *See generally* Prelim. Resp.

We find Petitioner's proposal is consistent with the level of ordinary skill in the art reflected by the prior art of record, and, therefore, adopt Petitioner's proposed level of ordinary skill in the art for purposes of this Decision. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001).

F. Claim Construction

In an *inter partes* review, we apply the same claim construction standard that would be used in a civil action under 35 U.S.C. § 282(b), following the standard articulated in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b) (2021). In applying this standard, we generally give claim terms their ordinary and customary meaning, as would be understood by a person of ordinary skill in the art, at the time of the invention and in the context of the entire patent disclosure. *Phillips*, 415 F.3d at 1312–14.

Petitioner asserts that “[f]or this Petition, claim terms should be given their plain and ordinary meaning” and “[t]o the extent certain terms are subject to multiple interpretations, those questions do not affect the grounds advanced here.” Pet. 12 (citing Ex. 1003 ¶ 116).

IPR2022-01012

Patent 10,833,809 B2

Patent Owner asserts that in the Texas litigation and in the Delaware litigation,⁸ the district courts construed “transceiver” to mean “a communications device capable of transmitting and receiving data wherein the transmitter portion and receiver portion share at least some common circuitry.” Prelim. Resp. 31 (citing Ex. 2014, 15; *TQ Delta, LLC v. 2Wire, Inc.*, No. 1:13-cv-01835, Dkt. No. 477, at 4 (D. Del. Jan. 30, 2018)). Patent Owner asserts that Petitioner has agreed with this construction of “transceiver” in other petitions on patents that share an essentially identical specification with the ’809 patent. Prelim. Resp. 30 n.8 (citing IPR2022-00697, IPR2022-00833).

The claim construction order in the Texas litigation issued after the Petition in this case was filed. *Compare* Ex. 2014 (Texas litigation claim construction order dated June 8, 2022), *with* Pet. 81 (dated May 20, 2022). However, aside from Patent Owner providing the district courts’ construction of the term “transceiver,” neither party provides any substantive arguments on claim construction, including whether the claim construction adopted in the Texas litigation should also be adopted here, or whether (and if so, how) the claim construction adopted in the Texas litigation departs from the plain and ordinary meaning of the term “transceiver.” As stated above, Petitioner states that it applies the plain and ordinary meaning to the claim terms. *See* Pet. 12.

At this stage in the proceeding, and without further argument from the parties, we determine that we do not need to expressly construe any term for

⁸ Patent Owner does not explain how the Delaware litigation relates to this proceeding, and neither party identifies the Delaware litigation as a Related Matter in its Rule 42.8 Mandatory Notices. *See* Pet. 78; Paper 5, 1; Paper 6, 3.

IPR2022-01012

Patent 10,833,809 B2

purposes of this Decision. *See Realtime Data LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *VividTechs., Inc. v. Am. Sci. Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))). The parties are encouraged to further develop claim construction arguments during trial.

G. Asserted Obviousness over G.993.2, Mitlin, and Fukushima

Petitioner contends that claims 1–28 of the ’809 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over G.993.2, Mitlin, and Fukushima. Pet. 19–56. For the reasons discussed below, we conclude that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that at least one challenged claim is unpatentable on this asserted ground.

1. G.993.2 Overview

G.993.2 (VDSL2) is an enhancement to G.993.1 that specifies requirements for VDSL transceivers located at the central office (VTU-O transceiver) and at the subscriber’s premises (VTU-R transceiver). Ex. 1004, §§ 1, 4, 5.1, Fig. 5-1.

IPR2022-01012

Patent 10,833,809 B2

Figure 5-1, reproduced below, depicts the functional blocks and interfaces of the VTU-O and VTU-R:

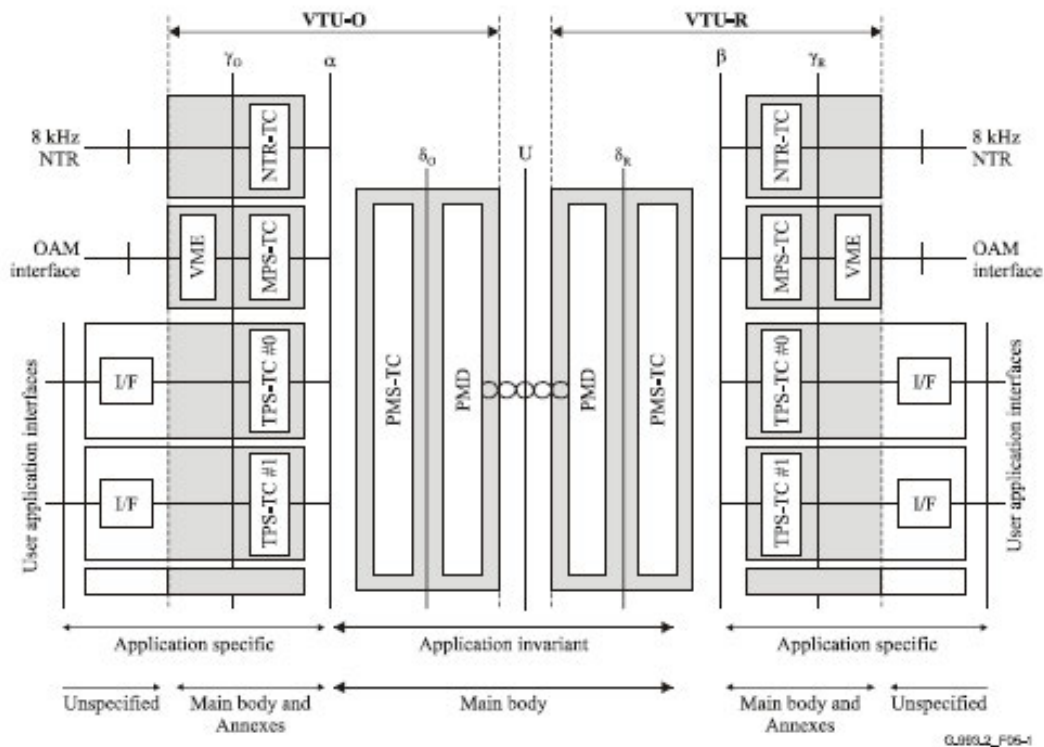


Figure 5-1/G.993.2 – VDSL2 and VTU functional model

Figure 5-1, above, depicts identical functionality for VTU-O (on the left) and VTU-R (on the right). Specifically, for each of VTU-O and VTU-R, Figure 5-1 depicts an application-invariant section that consists of the physical medium dependent (PMD) sub-layer and physical media specific part of the transmission convergence (PMS-TC) sub-layer, and an application specific section, consisting of the transport protocol specific transmission convergence (TPS-TC) sub-layer and application interfaces. *Id.* § 5.1. The management protocol specific TC (MPS-TC) is intended for management data transport, and the VDSL2 management entity (VME) supports management data communication protocols. *Id.*

IPR2022-01012

Patent 10,833,809 B2

G.993.2 describes that “[t]he PMS-TC sub-layer contains framing and frame synchronization functions, as well as forward error correction (FEC), error detection, interleaving and de-interleaving, scrambling, and descrambling functions.” *Id.* In addition, “the PMS-TC sub-layer provides an overhead channel that is used to transport management data (control messages generated by the VME).” *Id.*

According to G.993.2, “[t]he VME function facilitates the management of the VTU,” so “[m]anagement information is exchanged between the VME functions of the VTU-O and VTU-R through the overhead channel provided by the PMS-TC. The MPS-TC converts the incoming management data into the unified format required . . . to be multiplexed into the PMS-TC.” *Id.*

The TPS-TC sub-layer contains “one or more TPS-TCs providing transport of user data utilizing different transport protocols, a management TPS-TC (MPS-TC) providing [Embedded Operations Channel (eoc)] transport over the VDSL2 link, and an NTR-TC providing transport of the network timing reference.” *Id.* § 8. The user data types include Synchronous Transport Mode (STM) transport (STM-TC), Asynchronous Transport Mode (ATM) transport (ATM-TC), and “Ethernet and generic packet transport (PTM-TC).” *Id.* § 8.1.1.

The MPS-TC “is intended to facilitate transport of eoc data between the VDSL2 management entities.” *Id.* § 8.2. “In the transmit direction, the MPS-TC gets the eoc message from the VME over the application interface . . . , encapsulates it using the HDLC frame format, and submits it to the . . . interface to be transported via the VDSL2 link using the PMS-TC overhead messaging channel.” *Id.* § 8.2.1. “In the receive direction, the MPS-TC delineates the HDLC frames, runs the FCS check, and extracts the

IPR2022-01012

Patent 10,833,809 B2

encapsulated eoc message from the correctly received HDLC frames. The received eoc messages are submitted to the VME.” *Id.*

The PMS-TC “provides transmission medium specific TC functions, such as scrambling, framing, forward error correction (FEC), and interleaving.” *Id.* § 9. The PMS-TC functional model is shown in Figure 9-1, reproduced below:

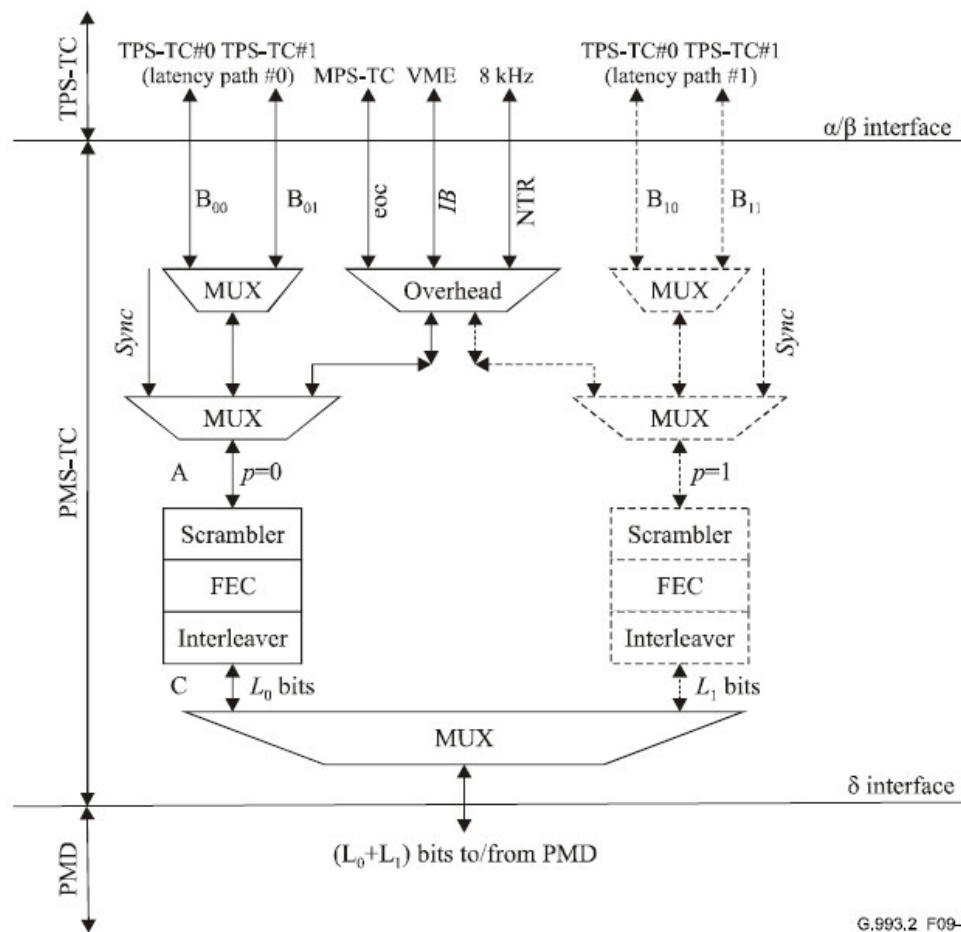


Figure 9-1/G.993.2 – PMS-TC functional model

Figure 9-1, above, depicts that “[u]p to two bearer channels of transmit user data originated by various TPS-TCs, management data originated by the MPS-TC, and NTR data are incoming [to the PMS-TC sub-layer] via the . . . interface in a uniform format.” *Id.* § 9.1. “The incoming user data and the

IPR2022-01012

Patent 10,833,809 B2

overhead data are multiplexed into one or two latency paths.” *Id.* “The multiplexed data in each latency path is scrambled, encoded using Reed-Solomon forward error correction coding, and interleaved.” *Id.* “The interleaved buffers of data of both latency paths are multiplexed into a bit stream to be submitted to the PMD sub-layer.” *Id.*

Regarding interleaving, G.993.2 states that “[i]nterleaving shall be provided in all supported latency paths to protect the data against bursts of errors by spreading the errors over a number of Reed-Solomon codewords.” *Id.* § 9.4. “The interleaver depth shall be set to meet the requirements for error-burst protection and latency,” but “[a]t any data rate, the minimum latency occurs when the interleaver is turned off.” *Id.*; *see also id.* § 9.7 (“When the interleaver is disabled (interleaver depth = 1) . . .”).

Regarding the PMD, G.993.2 states

[T]he transmit PMD function receives a symbol encoder input data frame (containing L bits) from the transmit PMS-TC function. The data frame shall then be symbol encoded . . . [and] will generate a complex value for each sub-carrier These complex values shall be modulated into data symbols . . . to produce an analog signal for transmission across the digital subscriber line.

Id. § 10.

Regarding the eoc messages, G.993.2 states “[t]o communicate management data, the VME uses eoc messages.” *Id.* § 11.1. G.993.2 explains:

A VTU invokes eoc communication with the VTU at the other end of the link by sending an eoc command message. The responding VTU, acting as a slave, shall acknowledge a command it has received correctly by sending a response. Furthermore, it shall perform the requested management function. Both VTUs shall be capable of sending eoc commands and responding to received eoc commands. The

IPR2022-01012

Patent 10,833,809 B2

same eoc protocol format shall be used in both transmission directions. To send commands and responses over the line, the VME originates eoc messages. Each eoc message is a command, a command segment, a response, or a response segment. The VME sends each eoc message to the MPS-TC.

. . .

The VME shall send the eoc command only once and wait for a response. No more than one command of each priority level shall be awaiting a response at any time. Upon reception of the response a new command of the same priority level may be sent If a response to a particular message is not received within a specific time period . . . , or is received incorrectly, a time-out occurs. After a time-out, the VME may either re-send the message or abandon it.

Id. § 11.2.2.

2. Mitlin Overview

Mitlin is titled “Performance Evaluation of Multicarrier Channels with Forward Error Correction and Automatic Retransmission Request” and is generally directed to multi-carrier data communications, in particular to “evaluating the performance of multi-carrier channels to select transmission parameters including forward error correction (FEC) and automatic retransmission request (ARQ) parameters.” Ex. 1005, code (54), ¶ 3.

IPR2022-01012

Patent 10,833,809 B2

Figure 1, reproduced below, depicts an exemplary discrete multi-tone (DMT) communications system:

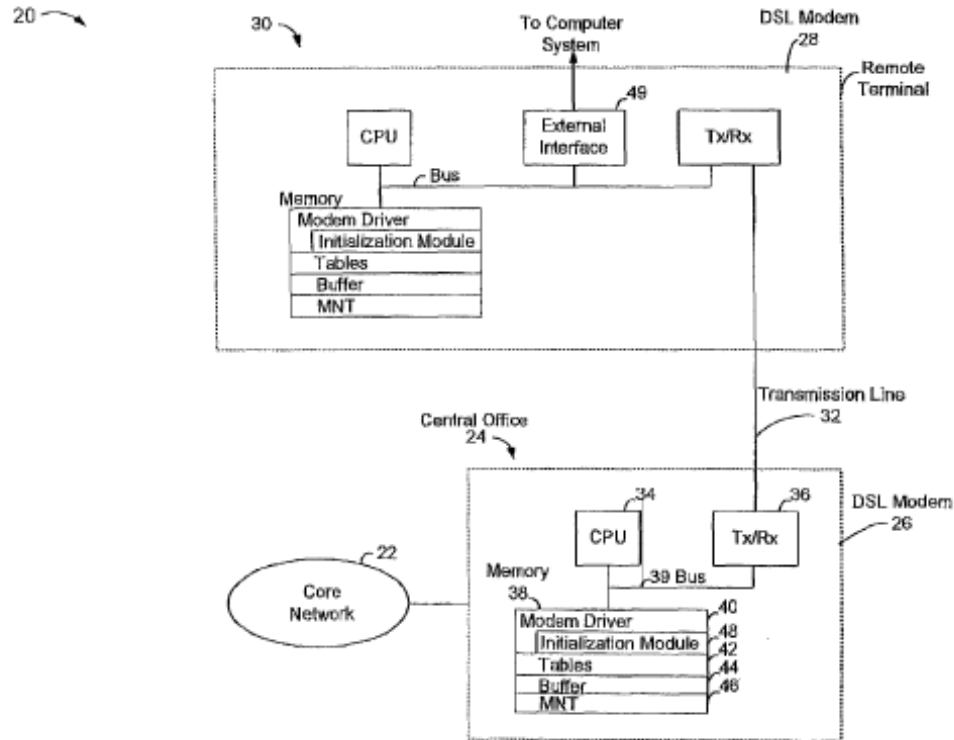


FIG. 1

Figure 1, above, shows modem 26 at central office 24 and modem 28 at remote terminal 30 that are interconnected by transmission line 32. *Id.* ¶ 26. Modem 26 includes processor (CPU) 34, transmitter/receiver (Tx/Rx) 36, and memory 38, which are interconnected by a bus 39. *Id.* Modem 28 includes the same components. *Id.* ¶ 27.

Mitlin describes data transmission between two stations, where both upstream and downstream stations 62 and 64, respectively, send information and acknowledgment frames. *Id.* ¶ 138. Upstream and downstream stations 62 and 64 each have a transmitter and a receiver. *Id.* “The error-controlling algorithm may be a combination of forward error correction and

IPR2022-01012

Patent 10,833,809 B2

a cyclic redundancy check (CRC).” *Id.* “In one embodiment, a multilevel Reed-Solomon type of code is used for FEC.” *Id.* Mitlin describes that “[f]orward error correction allows the station to correct and accept an information frame with a number of errors less than or equal to the maximum number of correctable errors.” *Id.* ¶ 139. When an information frame has more than the maximum number of correctable errors, a negative acknowledgment frame is sent back to the peer station. *Id.* A positive acknowledgment frame is sent after frames are received with no errors or correctable errors. *Id.*

3. Fukushima Overview

Fukushima is titled “Data Transmission Method and Data Transmission Apparatus” and is generally directed to data transmission performed in packet units. Ex. 1006, code (54), ¶ 1. Fukushima describes that “[e]ach packet . . . is composed of a data section containing digital data such as video data, audio data, and text data, and a header section containing additional information other than these digital data.” *Id.* ¶ 96. “[T]he header section of each packet contains additional information relating to its sequence number, priority, and data reproduction time at the receiving end.” *Id.*

4. Analysis of Independent Claim 1

Petitioner contends that G.993.2, Mitlin, and Fukushima, alone or in combination, teach or suggest each limitation of independent claim 1. Pet. 23–38. In support, Petitioner identifies certain passages and figures in the references and explains their significance with respect to the corresponding claim limitation. *Id.* Petitioner also provides reasons, supported by the testimony of Mr. McNair, why it would have been obvious

IPR2022-01012
 Patent 10,833,809 B2

to one of ordinary skill in the art to combine G.993.2, Mitlin, and Fukushima. *Id.* at 19–23.

a. [1.pre]: “An apparatus comprising:”

Petitioner contends that to the extent the preamble is limiting, G.993.2 discloses this limitation in both the VTU-O and VTU-R transceiver units. Pet. 23 (citing Ex. 1004 § 4); *see id.* at 23–25 (citing Ex. 1004, Fig. 5-1, §§ 1, 5; Ex. 1003 ¶¶ 150–152).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp. Nonetheless, the burden remains on Petitioner to demonstrate unpatentability. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

Based on our review and consideration of the current record, we determine that Petitioner has sufficiently shown that G.993.2 teaches the preamble for purposes of institution.⁹

b. Limitation [1.a]: “a multicarrier transceiver including a processor and memory capable of:”

Petitioner contends that G.993.2 discloses a “VDSL2 transceiver unit” or “VTU,” i.e., VTU-R and VTU-O. Pet. 25 (citing Ex. 1004 §§ 4, 5, 6.1, 7.1, 7.4, 9). Petitioner further contends that G.993.2 “discloses ‘SUPPORTEDCARRIERS set’ as a set of sub-carriers allocated for transmission in the ‘downstream [by the VTU-O] and upstream [by the VTU-R] directions’” and “[e]ach sub-carrier in this set is a distinct carrier frequency that is modulated during DMT modulation, resulting in multicarrier modulation and demodulation.” *Id.* at 25–26 (citing Ex. 1004

⁹ Neither party argues whether the preamble limits claim 1. Although we find that the evidence supports that the prior art teaches the preamble, we make no determination at this stage of the proceeding whether the preamble of claim 1 is limiting.

IPR2022-01012

Patent 10,833,809 B2

§§ 3.54, 3.56). Petitioner contends that a person of ordinary skill in the art “would understand each center frequency of a sub-channel, or the corresponding sub-carrier, is a distinct carrier frequency from several carrier frequencies.” *Id.* at 26 (citing Ex. 1003 ¶ 154). Petitioner further asserts that G.993.2 “discloses VTUs performing digital signal processing, which was well-known and understood to be executed by a processor communicatively coupled to memory.” *Id.* (citing Ex. 1003 ¶ 155). In particular, Petitioner contends that G.993.2 “discloses that its VTUs apply digital signal processing to perform error control techniques, including ‘forward-error correction (FEC), error detection, interleaving and de-interleaving, scrambling and descrambling.’” *Id.* (citing Ex. 1004 § 5.1, Figs. 5–1, 5–2, 5–3, 5–4). Petitioner also contends that G.993.2 discloses that its VTUs include interleaver memory. *Id.* (citing Ex. 1004 §§ 6.2.8, 12.3.5.2.1.3).

Petitioner further states that “Mitlin also discloses this claim element.” *Id.* Petitioner contends that a person of ordinary skill in the art “would have understood that [Mitlin’s] modems 26 and 28 are both transceivers” that include a processor, a transmitter/receiver, and a memory, interconnected by a bus. *Id.* at 26–27 (citing Ex. 1005 ¶ 26, Fig. 1; Ex. 1003 ¶ 158). Petitioner further asserts that modems 26 and 28 “implement a multicarrier transmission method.” *Id.* at 26 (citing Ex. 1005 ¶ 26, Fig. 1).

Patent Owner contends that Petitioner has not shown how the references disclose the claimed “transceiver” as construed in the district courts (*see* Section III.F, above), i.e., “a communications device capable of transmitting and receiving data wherein the transmitter portion and receiver portion share at least some common circuitry.” Prelim. Resp. 31.

IPR2022-01012

Patent 10,833,809 B2

According to Patent Owner, the “Petition does not purport to follow this construction, and its evidence and allegations are deficient as a result.” *Id.*

Based on our review and consideration of the current record, as set forth above, we determine that Petitioner has sufficiently shown that G.993.2 and Mitlin teach this limitation for purposes of institution. Regarding the claimed “transceiver,” specifically, as cited by Petitioner, G.993.2 discloses a VTU (“VDSL2 Transceiver Unit”), e.g., VTU-O and VTU-R. Ex. 1004 § 4, Fig. 5-1. Likewise, as cited by Petitioner, Mitlin discloses modems 26 and 28, each with a processor (CPU), a transmitter/receiver, and a memory, which are interconnected by a bus. Ex. 1005 ¶ 26. At this stage of the proceeding, we find these disclosures sufficient to teach the claimed “transceiver.”¹⁰ Patent Owner’s arguments relating to the district courts’ claim construction of “transceiver” fail to explain why these disclosures in G.993.2 and Mitlin do not teach the claimed “transceiver.” As stated above in Section III.F, the parties are encouraged to further develop these arguments at trial.

c. Limitation [1.b]: “transmitting a packet using forward error correction encoding and interleaving”

Petitioner contends that G.993.2 teaches this limitation because a person of ordinary skill in the art would have understood that G.993.2’s “frame” is a “packet” as claimed. Pet. 28 (citing Ex. 1004 § 3.20; Ex. 1003 ¶ 168). Moreover, Petitioner contends that G.993.2 explicitly discloses user data in the form of “[e]thernet and generic packet[s].” *Id.* (citing Ex. 1004 §§ 8.1.1, K.3).

¹⁰ As set forth above, Petitioner states that it applies the plain and ordinary meaning to the claim terms, including “transceiver.” See Pet. 12.

IPR2022-01012

Patent 10,833,809 B2

Petitioner argues that the VTU's PMS-TC sub-layers perform forward error correction (FEC), error detection, interleaving and de-interleaving functions. *Id.* (citing Ex. 1004 § 5.1, Fig. 9-1). Relying on Figure 9-1, Petitioner argues, *inter alia*, that “[t]he incoming user data and the overhead data [from the TPS-TC sub-layer] are multiplexed into one or two latency paths [in the PMS-TC sub-layer].” *Id.* at 29 (citing Ex. 1004 § 9.1). Petitioner further contends that this multiplexed data “is scrambled, [and] encoded using Reed-Solomon forward error correction coding,” and “may or may not be interleaved.” *Id.* (citing Ex. 1004 §§ 9.1, 9.4, 9.7). Therefore, Petitioner argues, a person of ordinary skill in the art would have understood that “G.993.2 discloses a VTU (e.g., a VTU-O) that includes a TPS-TC sub-layer for receiving (from a higher layer) user data as packets, and a PMS-TC sub-layer for applying error correction in the form of FEC and/or interleaving techniques to those packets to prepare the packet for transmission to another VTU (e.g., a VTU-R) via the PMD.” *Id.* at 30 (citing Ex. 1003 ¶ 183).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp. Based on our review and consideration of the current record, we determine that Petitioner has sufficiently shown that G.993.2 teaches this limitation for purposes of institution.

d. Limitation [1.b.1]: “wherein the packet comprises a header field and a plurality of Reed-Solomon codewords”

Petitioner asserts that G.993.2 discloses user data in the form of “[e]thernet and generic packet[s],” and refers to Annex N of G.992.3, which describes a “packet” as “any type of packet (e.g., layer 2 or layer 3 packet or part thereof).” Pet. 30 (emphasis omitted) (citing Ex. 1004 §§ 8.1.1, K.3;

IPR2022-01012
 Patent 10,833,809 B2

Ex. 1025 § N.1).¹¹ Petitioner contends that, “[s]ince all such packets have a header, a [person of ordinary skill in the art] would have understood that a packet includes a header with one or more header fields.” *Id.* (citing Ex. 1003 ¶ 186). Petitioner also relies on Fukushima for teaching “a header section containing additional information other than these digital data.” *Id.* at 30–31 (emphasis omitted) (citing Ex. 1006 ¶ 96).

Petitioner relies on G.993.2 to disclose “a plurality of Reed-Solomon codewords.” *Id.* at 31. Specifically, Petitioner asserts that G.993.2 discloses that “[t]he multiplexed data in each latency path is scrambled, encoded using *Reed-Solomon forward error correction coding*, and interleaved.” *Id.* (citing Ex. 1004 § 9.1).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp. Based on our review and consideration of the current record, for purposes of institution, we determine that Petitioner has sufficiently shown that the combination of G.993.2 and Fukushima teaches this limitation. Petitioner’s rationale to combine the references will be discussed below in Section III.G.4.i.

e. Limitation [1.b.2]: “wherein the header field comprises a sequence identifier (SID)”

Petitioner states that Fukushima teaches this limitation because it discloses that “the header section of each packet contains additional information relating to its sequence number, priority, and data reproduction time at the receiving end.” Pet. 31 (citing Ex. 1006 ¶ 96) (emphasis

¹¹ Annex N, including § N.1, is in Amendment 1 to ITU-T Recommendation G.992.3, *Series G: Transmission Systems and Media, Digital Systems and Networks, Digital sections and digital line system – Access networks, Asymmetric high speed digital subscriber line transceivers 2 (ADSL2)* (Sept. 2005), submitted as Exhibit 1025.

IPR2022-01012

Patent 10,833,809 B2

omitted). According to Petitioner, a person of ordinary skill in the art would have understood that Fukushima’s “sequence number” in a packet’s “header section” is a “header field compris[ing] a sequence identifier (SID).” *Id.* (citing Ex. 1003 ¶ 196).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp. Based on our review and consideration of the current record, for purposes of institution, we determine that Petitioner has sufficiently shown that Fukushima teaches this limitation.

f. Limitation [1.c]: “receiving a message using forward error correction decoding and without using deinterleaving”

Petitioner contends that G.993.2 teaches this limitation because G.993.2’s VTUs exchange embedded operations channel (eoc) messages that are encoded by the FEC module and may be transmitted and received without using interleaving and deinterleaving. Pet. 32 (citing Ex. 1004 § 9.7; Ex. 1003 ¶ 198). Petitioner asserts that in G.993.2, “eoc messages are multiplexed with user data prior to transmission,” and “the multiplexed data including eoc messages is encoded using FEC before it is provided to the PMD for transmission.” *Id.* at 33 (citing Ex. 1004 § 9.1; Ex. 1003 ¶¶ 206–207). According to Petitioner, G.993.2 teaches that the receiving VTU (e.g., VTU-R) can detect and, if necessary, correct errors in the eoc messages. *Id.* (citing Ex. 1004, Fig. 9-1; Ex. 1003 ¶ 207). If an uncorrectable error is detected in a received eoc message, the VTU-R does not respond and, after a time-out, the VTU-O retransmits the eoc message. *Id.* (citing Ex. 1003 ¶ 207). Petitioner contends that the resent message would be encoded for FEC and received at the VTU-R using FEC decoding. *Id.* (citing Ex. 1003 ¶ 207).

IPR2022-01012

Patent 10,833,809 B2

Petitioner also asserts that G.993.2's eoc messages may be received without interleaving. *Id.* at 34. With reference to Figure 9-1, Petitioner contends that the multiplexed data, including eoc messages, may be interleaved before transmission and deinterleaved upon receipt, but that G.993.2 also discloses that interleaving may be turned off. *Id.* (citing Ex. 1004 §§ 5.1, 6.2.8, 9.7 Fig. 6-1; Ex. 1003 ¶¶ 208, 209). Thus, Petitioner contends that VTUs in G.993.2 are capable of receiving messages “without using interleaving” as required by limitation 1.c.

Petitioner further contends that G.993.2 teaches that user data and overhead data are multiplexed onto one or two latency paths, so that, in the case of two latency paths, one latency path may include the use of interleaving and deinterleaving and the other latency path may not include the use of interleaving and deinterleaving. *Id.* at 35 (citing Ex. 1004 § 9.1, Fig. 6-1; Ex. 1003 ¶ 209). Petitioner contends that a person of ordinary skill in the art (1) “would readily understand the benefits of transmitting a message without interleaving, including reduced latency,” (2) “would further understand that an FEC encoded acknowledgement message^[12] in view of G.993.2's teaching regarding the optional use of interleaving could be sent without interleaving, or the corresponding de-interleaving,” and (3) “would have been motivated to employ this approach to reduce the overall latency of messages while applying FEC to provide error correction.” *Id.* at 35–36 (citing Ex. 1003 ¶¶ 211, 220, 221).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp. Based on our review and consideration of the

¹² Acknowledgement messages are addressed further below in connection with limitation 1.c.2.

IPR2022-01012

Patent 10,833,809 B2

current record, for purposes of institution, we determine that Petitioner has sufficiently shown that G.993.2 teaches this limitation.

g. Limitation [1.c.1]: “wherein the message is received in a single DMT symbol”

Petitioner contends that “[a]s discussed with respect to claim element 1.b,” G.993.2’s VTU can transmit a packet as one or more DMT symbols using DMT modulation, and “[a]s discussed with respect to claim element 1.c,” G.993.2’s VTU can transmit or receive messages, such as eoc messages. Pet. 36 (citing Ex. 1004 § 10; Ex. 1003 ¶¶ 224, 225). According to Petitioner, “G.993.2’s eoc messages may include different commands or responses or a repeated command when a previous transmission carrying that command was not received correctly.” *Id.* (citing Ex. 1004 § 11.2.2; Ex. 1003 ¶ 225). Petitioner states that “only upon receipt of a response from the receiving VTU may the next eoc message be sent,” and “[i]f a time-out occurs and no response is received, the previously sent eoc message may be sent again.” *Id.* at 36–37 (citing Ex. 1004 § 11.2.2; Ex. 1003 ¶ 228). Petitioner contends that “all eoc messages would be distinct in time” because “at a transmitting VTU, no eoc message is sent before an acknowledgement is received for the previously sent message, or a timeout occurs.” *Id.* at 37 (citing Ex. 1003 ¶ 228). Therefore, Petitioner argues, a person of ordinary skill in the art would have understood that each eoc message would be transmitted and subsequently received in a separate DMT symbol, thereby meeting this claim limitation. *Id.* (citing Ex. 1003 ¶ 228).

Patent Owner does not specifically respond to these arguments. *See generally* Prelim. Resp. Based on our review and consideration of the current record, for purposes of institution, we determine that Petitioner has sufficiently shown that G.993.2 teaches this limitation.

IPR2022-01012

Patent 10,833,809 B2

h. Limitation [1.c.2]: “wherein the message includes an acknowledgement (ACK) or a negative acknowledgement (NACK) of the transmitted packet”

Petitioner contends that “G.993.2 individually and in combination with Mitlin discloses this claim element.” Pet. 37. Petitioner states “[a]s discussed in connection with claim element 1.c.1, a transmitting VTU sends only one eoc message at a time and waits for a response.” *Id.* (citing Ex. 1003 ¶ 231). Petitioner states that a person of ordinary skill in the art would have understood that (1) “a VTU-R would accordingly acknowledge such an eoc message by sending a response and may also send an eoc message to the VTU in the other direction” and (2) “each such eoc command [would] include an encoded and modulated data symbol and would therefore be a packet as described in connection with claim element 1.b.” *Id.* at 37–38 (citing Ex. 1003 ¶ 232). According to Petitioner, “a receiving VTU must send an acknowledgement of receipt of the eoc message which would constitute an acknowledgement (ACK) of the transmitted packet” as recited by this limitation. *Id.* at 38 (citing Ex. 1004 § 11.2.2; Ex. 1003 ¶ 233).

Petitioner also asserts that “Mitlin discloses ‘a general case of data transmission between two stations where both upstream and downstream stations, 62 and 64, respectively, send information and acknowledgement frames.’” *Id.* (citing Ex. 1005 ¶¶ 138, 139; Ex. 1003 ¶ 234). In particular, Petitioner asserts that Mitlin discloses that when an information frame has more than the maximum number of errors that can be corrected by FEC, “a negative acknowledgement is sent,” but when an information frame is received with no error or errors that can be corrected with FEC, “a positive acknowledgement frame is sent.” *Id.* (citing Ex. 1005 ¶ 139). Therefore, Petitioner contends that G.993.2 in view of Mitlin teaches this limitation. *Id.*

IPR2022-01012

Patent 10,833,809 B2

Patent Owner argues that the Petition fails to show “an acknowledgment (ACK) or negative acknowledgement (NACK) of the transmitted packet.” Prelim. Resp. 32. Specifically, Patent Owner asserts that “[t]he Petition points to the packets in [G.993.2] that allegedly contain Reed-Solomon codewords,” but “does not point to any ACKs or NACKs for those packets.” It instead points to alleged ACKs and NACKs of different data (*e.g.*, ‘eoc messages’ in [G.993.2] and unspecified ‘information’ in Mitlin).” *Id.* Patent Owner asserts that “there is no allegation in the Petition that eoc messages have any aspects of the claimed packet, *e.g.*, containing Reed-Solomon codewords,” and “thus, no evidence that an ACK for an eoc message in [G.993.2] is an ACK ‘of the transmitted packet.’” *Id.* at 32–33. Similarly, Patent Owner argues that “[t]he Petition does not cite Mitlin as disclosing the claimed packet; there is thus no allegation or evidence that the ‘information’ in Mitlin is the packet of the claims.” *Id.* at 33.

On this preliminary record, we disagree with Patent Owner’s arguments. As set forth above, in its contentions for this limitation, Petitioner refers back to its analysis of limitations 1.b and 1.c. *See* Pet. 37–38. In its analysis of limitation 1.b, Petitioner, relying on Figure 9-1, argues that “[t]he incoming user data and the overhead data are multiplexed into one or two latency paths.” *Id.* at 29 (citing Ex. 1004 § 9.1). Petitioner contends that this multiplexed data “is scrambled, [and] encoded using Reed-Solomon forward error correction coding,” and “may or may not be interleaved.” *Id.*; *see also id.* at 30–31 (contentions as to limitation 1.b.1). In its contentions as to limitation 1.c, Petitioner contends that this multiplexed data includes eoc messages. *Id.* at 33–34 (citing Ex. 1004 § 9.1, Fig. 9-1; Ex. 1003 ¶¶ 206–207). Accordingly, we disagree with Patent Owner’s arguments that “there is no allegation in the Petition that eoc

IPR2022-01012

Patent 10,833,809 B2

messages have any aspects of the claimed packet,” and that there is “no evidence that an ACK for an eoc message in [G.993.2] is an ACK ‘of the transmitted packet.’” Prelim. Resp. 32–33. Rather, as set forth by Petitioner, “a receiving VTU must send an acknowledgement of receipt of the eoc message which would constitute an acknowledgement (ACK) of the transmitted packet.” Pet. 38. In other words, Petitioner’s argument is that (1) a G.993.2 packet transmitted as set forth in limitation 1.b may include an eoc message, (2) an acknowledgement of that eoc message may be included in a message received as set forth in limitation 1.c, and (3) that acknowledgement is also an acknowledgement of the transmitted packet, as required by limitation 1.c.2, because the transmitted packet included the eoc message whose receipt is being acknowledged.

Based on our review and consideration of the current record, for purposes of institution, we determine that Petitioner has sufficiently shown that G.993.2, or the combination of G.993.2 and Mitlin,¹³ teaches this limitation.

i. Motivation to Combine

Petitioner contends that G.993.2, Mitlin, and Fukushima are in the same or closely related fields, in that they disclose similar data communication techniques and also systems for data communications. Pet. 19–22. Mr. McNair testifies that a person of ordinary skill in the art would have been motivated to combine G.993.2 with Mitlin and Fukushima

¹³ Petitioner asserts that both G.993.2 and Mitlin teach limitations 1.a and 1.c.2. Although we find that Petitioner has met its burden for purposes of institution, we encourage Petitioner to provide further clarification as to the differences between the claimed subject matter and the prior art, e.g., specifically how G.993.2 and Mitlin are relied upon and why both references are needed for the combination.

IPR2022-01012

Patent 10,833,809 B2

“to improve G.993.2’s communication protocol.” Ex. 1003 ¶ 140.

Petitioner describes these improvements as “use of user data acknowledgements, and packets with message counts and/or sequence IDs.”

Pet. 22 (citing Ex. 1003 ¶ 146). Petitioner contends, for example, that a person of ordinary skill in the art “would have understood that G.993.2’s communication protocol could be improved using Mitlin’s acknowledgements.” *Id.* (citing Ex. 1003 ¶ 146). Petitioner contends that the combination “would have been nothing more than combining prior art elements according to known methods (information transmission using acknowledgement messages and packets) to obtain the predictable results described above.” *Id.* (citing Ex. 1003 ¶ 147). Petitioner also contends that a person of ordinary skill in the art would have been successful in combining G.993.2, Mitlin, and Fukushima. *Id.* at 23 (citing McNair ¶ 148).

Patent Owner argues that Petitioner has not shown a motivation to combine G.993.2 with Mitlin and Fukushima. Prelim. Resp. 37–39. For example, Patent Owner contends that Petitioner fails to show why the combination would have been made, and why one of ordinary skill in the art would have sought to improve the just-released G.993.2 standard. *Id.*

For purposes of institution, we find that Petitioner’s rationale, which is supported by the unrebutted testimony of Mr. McNair, sufficiently shows a motivation to combine the references with a reasonable expectation of success. However, we encourage the parties to further develop this issue at trial.

j. Conclusion for Independent Claim 1

Based on our review and consideration of the current record, we determine that Petitioner has adequately shown that the combination of G.993.2, Mitlin, and Fukushima teaches the limitations in claim 1, and has

IPR2022-01012

Patent 10,833,809 B2

provided sufficient rationale for combining the references for purposes of institution. We determine, on the current record and for purposes of this Decision, that the information presented in the Petition demonstrates a reasonable likelihood that claim 1 is unpatentable under 35 U.S.C. § 103(a) over the combination of G.993.2, Mitlin, and Fukushima.

5. Independent Claims 8, 15, and 22

For essentially the same reasons as those argued with respect to independent claim 1, Petitioner contends that independent claims 8, 15, and 22 would have been obvious over G.993.2, Mitlin, and Fukushima, and provides explanation as to how the references teach each claim limitation. Pet. 38–46. Patent Owner does not separately argue independent claims 8, 15, and 22. *See* Prelim. Resp.

Accordingly, for the same reasons as set forth above for independent claim 1, we determine that Petitioner has adequately shown that the combination of G.993.2, Mitlin, and Fukushima teaches the limitations in claims 8, 15, and 22, and has provided sufficient rationale for combining the references for purposes of institution. We determine, on the current record and for purposes of this Decision, that the information presented in the Petition demonstrates a reasonable likelihood that claims 8, 15, and 22 are unpatentable under 35 U.S.C. § 103(a) over the combination of G.993.2, Mitlin, and Fukushima.

6. Dependent Claims 2–7, 9–14, 16–21, and 23–28

Petitioner contends dependent claims 2–7, 9–14, 16–21, and 23–28, which depend directly or indirectly from independent claims 1, 8, 15, and 22, would have been obvious over G.993.2, Mitlin, and Fukushima, and provides explanation as to how the prior art teaches each claim limitation. Pet. 46–56.

IPR2022-01012

Patent 10,833,809 B2

We have reviewed Petitioner’s initial showing as to the dependent claims, and note that Patent Owner does not separately address the patentability of these claims beyond its arguments as to independent claim 1, addressed above. *See* Prelim. Resp.

As we preliminarily conclude that Petitioner demonstrates a reasonable likelihood of prevailing with respect to its challenge to independent claims 1, 8, 15, and 22 in view of G.993.2, Mitlin, and Fukushima, we also institute review on Petitioner’s challenge to the dependent claims for obviousness based on G.993.2, Mitlin, and Fukushima. *See* Consolidated Trial Practice Guide, 64 (Nov. 2019) (“TPG”), *available at* <https://www.uspto.gov/sites/default/files/documents/tpgnov.pdf> (citing *SAS Institute Inc., v. Iancu*, 138 S. Ct. 1348, 1359–60 (2018); *PGS Geophysical AS v. Iancu*, 891 F.3d 1354, 1359–62 (Fed. Cir. 2018)).

H. Asserted Obviousness over G.993.2, Mitlin, and Reynders

Petitioner contends that claims 1–28 of the ’809 patent are unpatentable under 35 U.S.C. § 103(a) as obvious over G.993.2, Mitlin, and Reynders. Pet. 57–72. For the reasons discussed below, we conclude that Petitioner has demonstrated a reasonable likelihood that it would prevail in showing that at least one challenged claim is unpatentable on this asserted ground.

1. Reynders Overview

Reynders describes that when a node transmits data, “it sends the data within a packet (or frame), which includes, in its header, the addresses of both the source and the destination.” Ex. 1007, 16 (§ 2.1).¹⁴ “Packet switched messages are broken into a series of packets of certain maximum

¹⁴ Citations are to the page numbers of the reference itself, not the exhibit page numbers added by Petitioner.

IPR2022-01012

Patent 10,833,809 B2

size, each containing the destination and source addresses and a packet sequence number.” *Id.* at 17 (§ 2.2.2).

2. Analysis

Petitioner’s contentions as to how the references teach the claim limitations largely track its contentions for the combination of G.993.2, Mitlin, and Fukushima, except that Petitioner relies on Reynders in place of Fukushima. Pet. 59–72. For example, Petitioner contends that Reynders teaches a “packet compris[ing] a header field” as recited in limitation 1.b.1 and “wherein the header field comprises a sequence identifier (SID)” as recited in limitation 1.b.2. *Id.* at 60–62. Petitioner also provides similar motivation to combine the references as with the first ground. *Id.* at 57–59.

Patent Owner also similarly argues that Petitioner has not provided sufficient reasoning why or how a person of ordinary skill in the art would have found Reynders or been motivated to combine it with the other references. Prelim. Resp. 39–40.

Based on our review and consideration of the current record, and for the same reasons as set forth above for the previous ground, we determine that Petitioner has adequately shown that the combination of G.993.2, Mitlin, and Reynders teaches the limitations in claims 1, 8, 15, and 22, and has provided sufficient rationale for combining the references for purposes of institution. We determine, on the current record and for purposes of this Decision, that the information presented in the Petition demonstrates a reasonable likelihood that claims 1, 8, 15, and 22 are unpatentable under 35 U.S.C. § 103(a) over the combination of G.993.2, Mitlin, and Reynders.

Because we preliminarily conclude that Petitioner demonstrates a reasonable likelihood of prevailing with respect to its challenge to independent claims 1, 8, 15, and 22 in view of G.993.2, Mitlin, and

IPR2022-01012

Patent 10,833,809 B2

Reynders, we also institute review on Petitioner's challenge to the dependent claims for obviousness based on G.993.2, Mitlin, and Reynders. *See* TPG 64.

IV. CONCLUSION

After considering the evidence and arguments presented in the Petition and Preliminary Response, we determine that the information presented shows a reasonable likelihood that Petitioner would prevail in establishing that at least one of the challenged claims of the '809 patent is unpatentable.

V. ORDER

Accordingly, it is

ORDERED that, pursuant to 35 U.S.C. § 314(a), an *inter partes* review is instituted for claims 1–28 of the '809 patent on the unpatentability grounds asserted in the Petition; and

FURTHER ORDERED that pursuant to 35 U.S.C. § 314(c) and 37 C.F.R. § 42.4, notice is hereby given of the institution of a trial, which commences on the entry date of this decision.

IPR2022-01012

Patent 10,833,809 B2

PETITIONER:

Sanjeet K. Dutta

Andrew Ong

GOODWIN PROCTER LLP

sdutta@goodwinlaw.com

aong@goodwinlaw.com

PATENT OWNER:

Christian J. Hurt

THE DAVIS FIRM PC

churt@davisfirm.com

Peter J. McAndrews

David Z. Petty

MCANDREWS, HELD & MALLOY LTD.

pmcandrews@mcandrews-ip.com

dpetty@mcandrews-ip.com